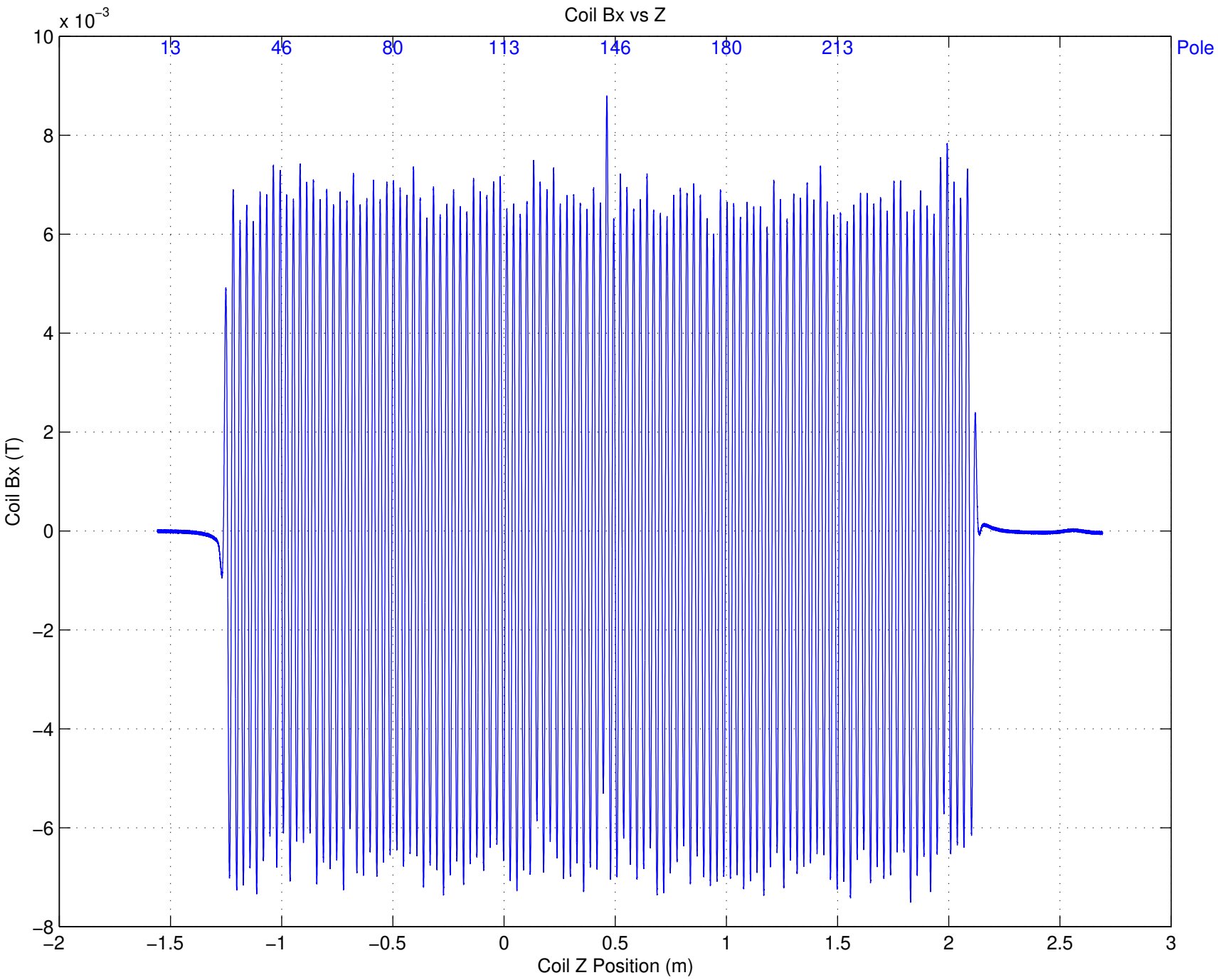
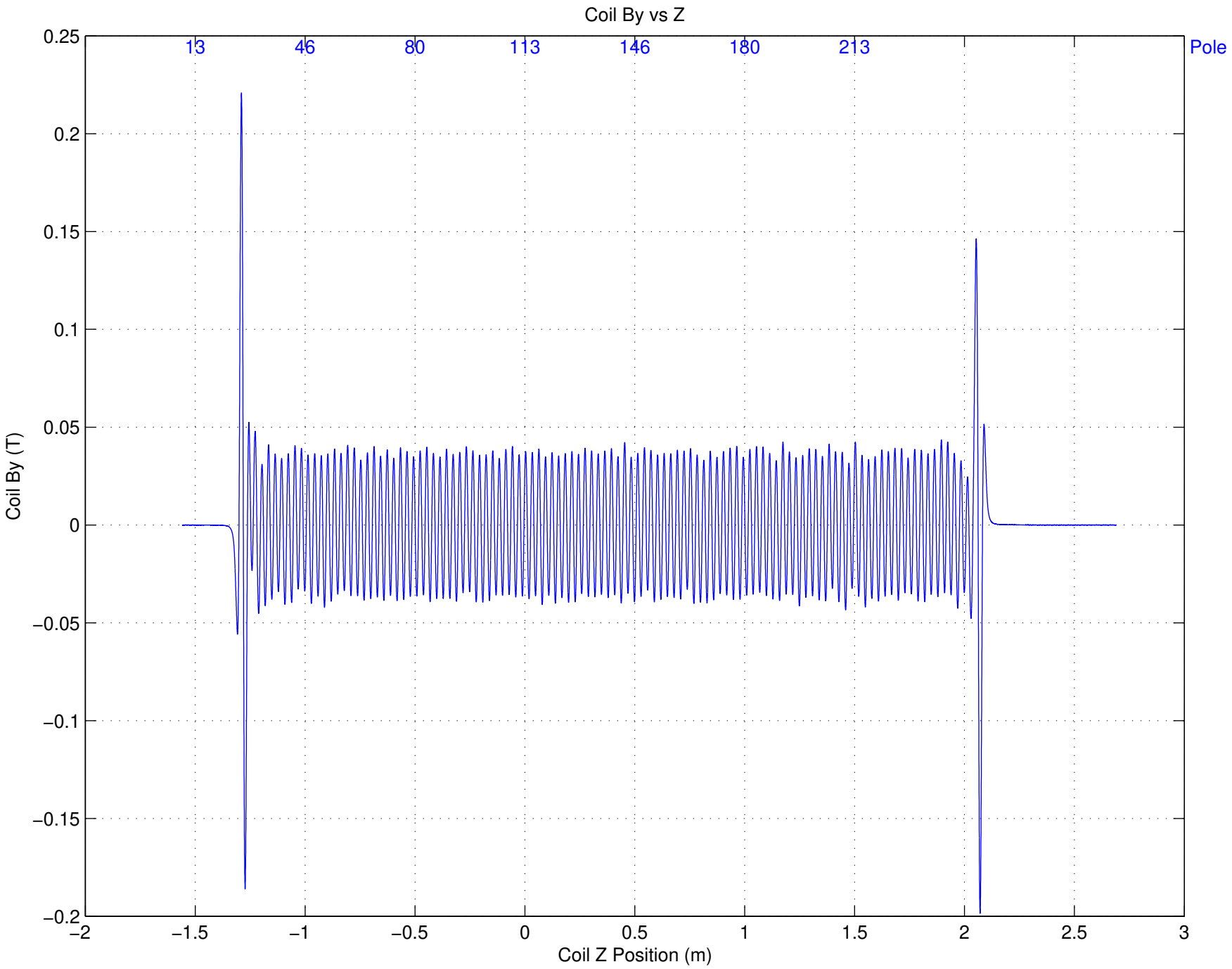
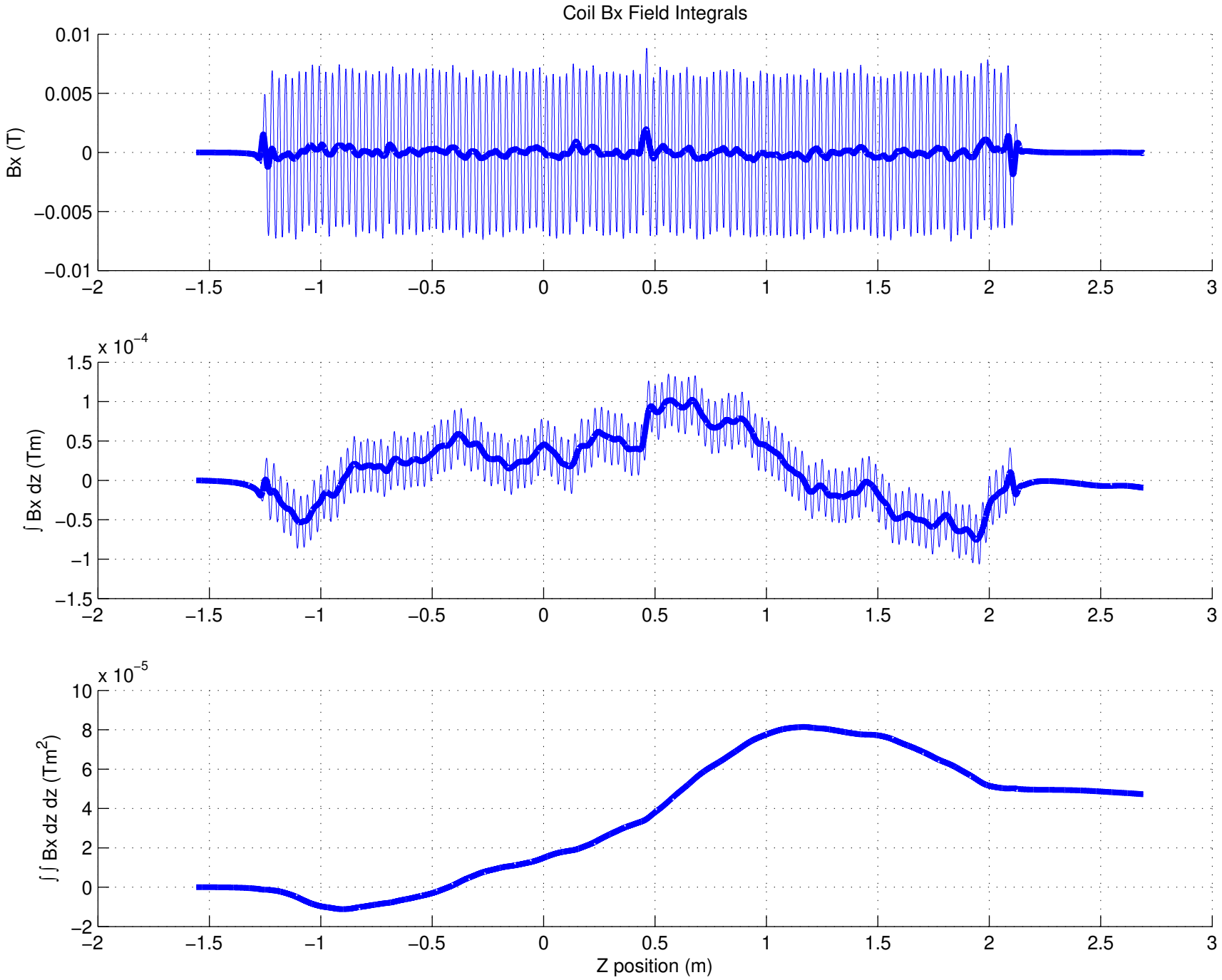
SLAC Magnetic Measurements

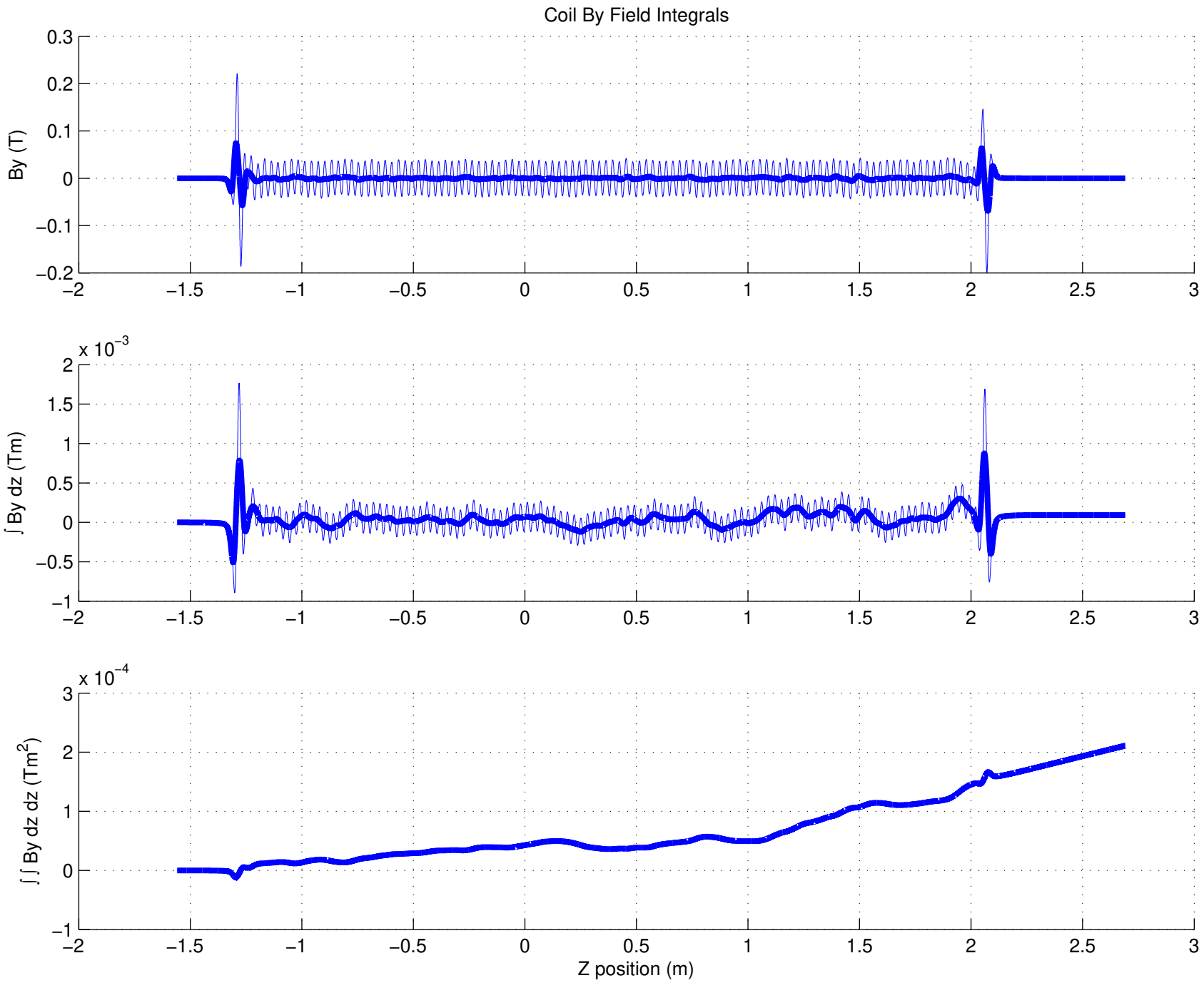
Coil Analysis

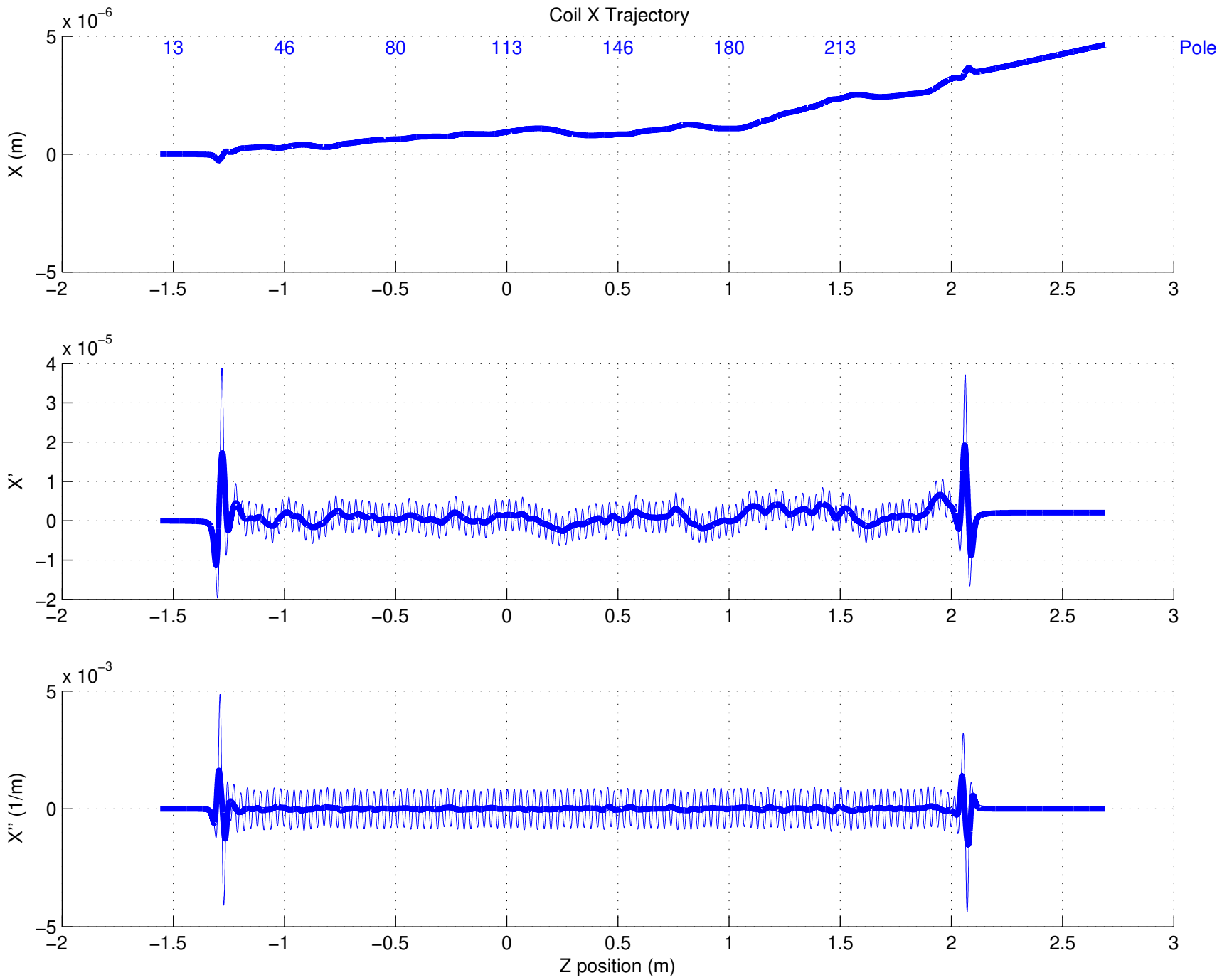
Parameters:
INPUT−FILE−DIR =s:\MagData\LCLS\Undulator\L143−112000−11\DATASET0001\Fine Tuning\Z Scans\Run 019\
INPUT−FILE−NAME =x+00000−y+000−bscanz.dat
INPUT−FILE−TYPE =ZVXYBXYC
GAMMA =26688.61
NOM−ZM−BXCOIL−AT−DEV−CTR =2.0589
NOM−ZM−BYCOIL−AT−DEV−CTR =2.0589
NOM−LAMBDA−U =0.03
NUM−POLES =226

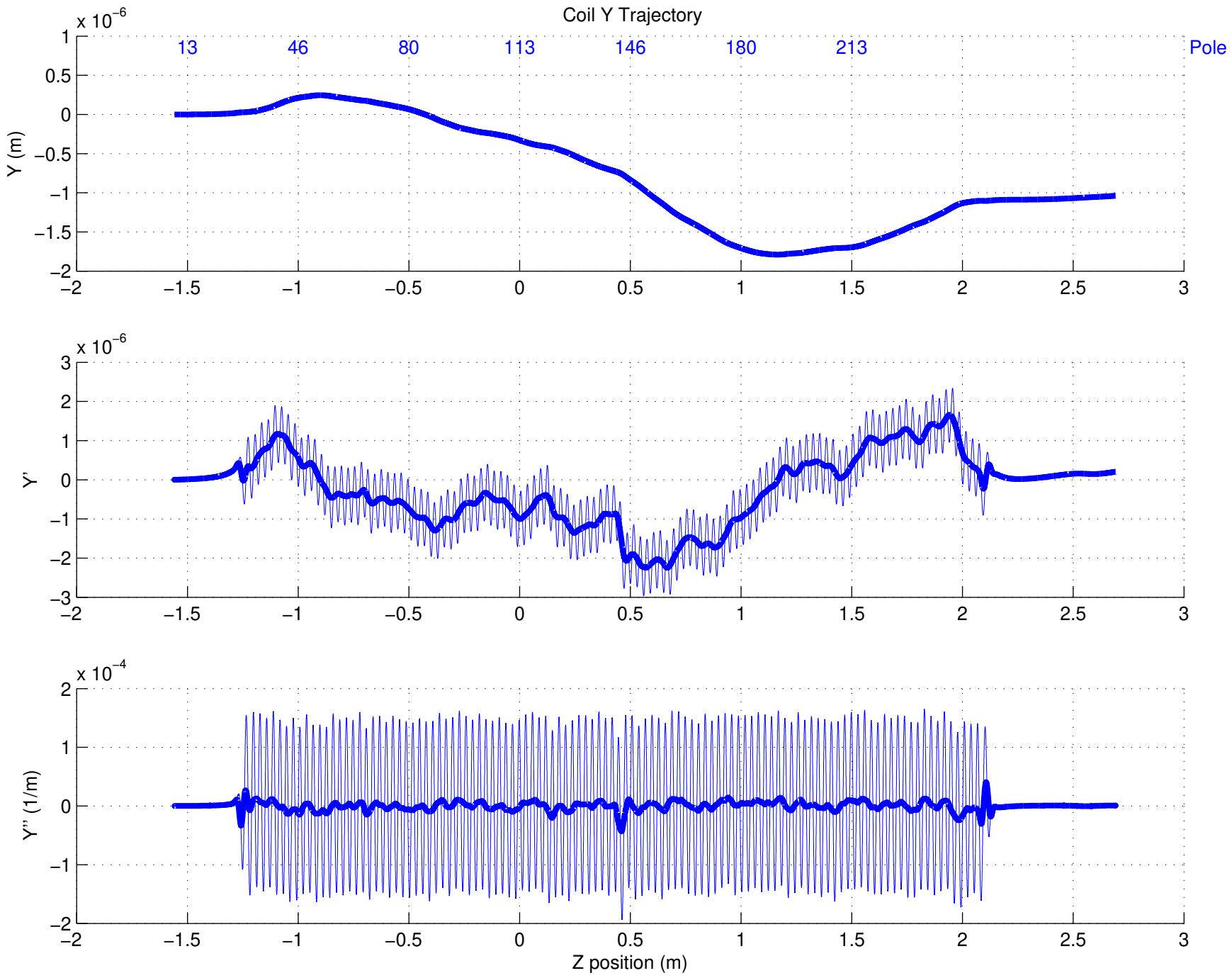

Coil Bx vs Z
x 10^-3
10
8
6
4
2
0
−2
−4
−6
−8
13
46
80
113
146
180
213
Pole
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3
Coil Bx (T)
Coil Z Position (m)

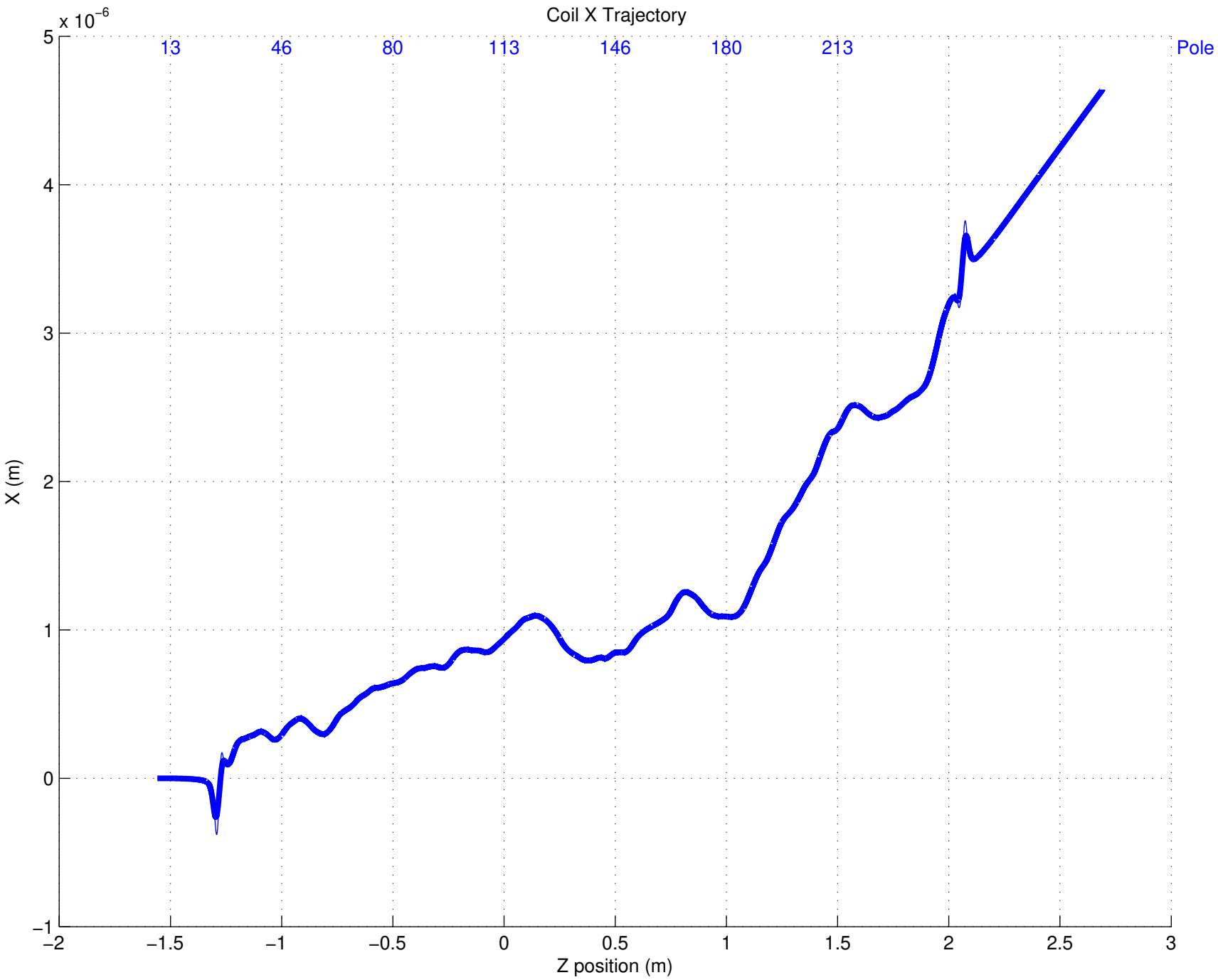

Coil By vs Z
13
46
80
113
146
180
213
Pole
0.25
0.2
0.15
0.1
0.05
0
−0.05
−0.1
−0.15
−0.2
Coil By (T)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3
Coil Z Position (m)

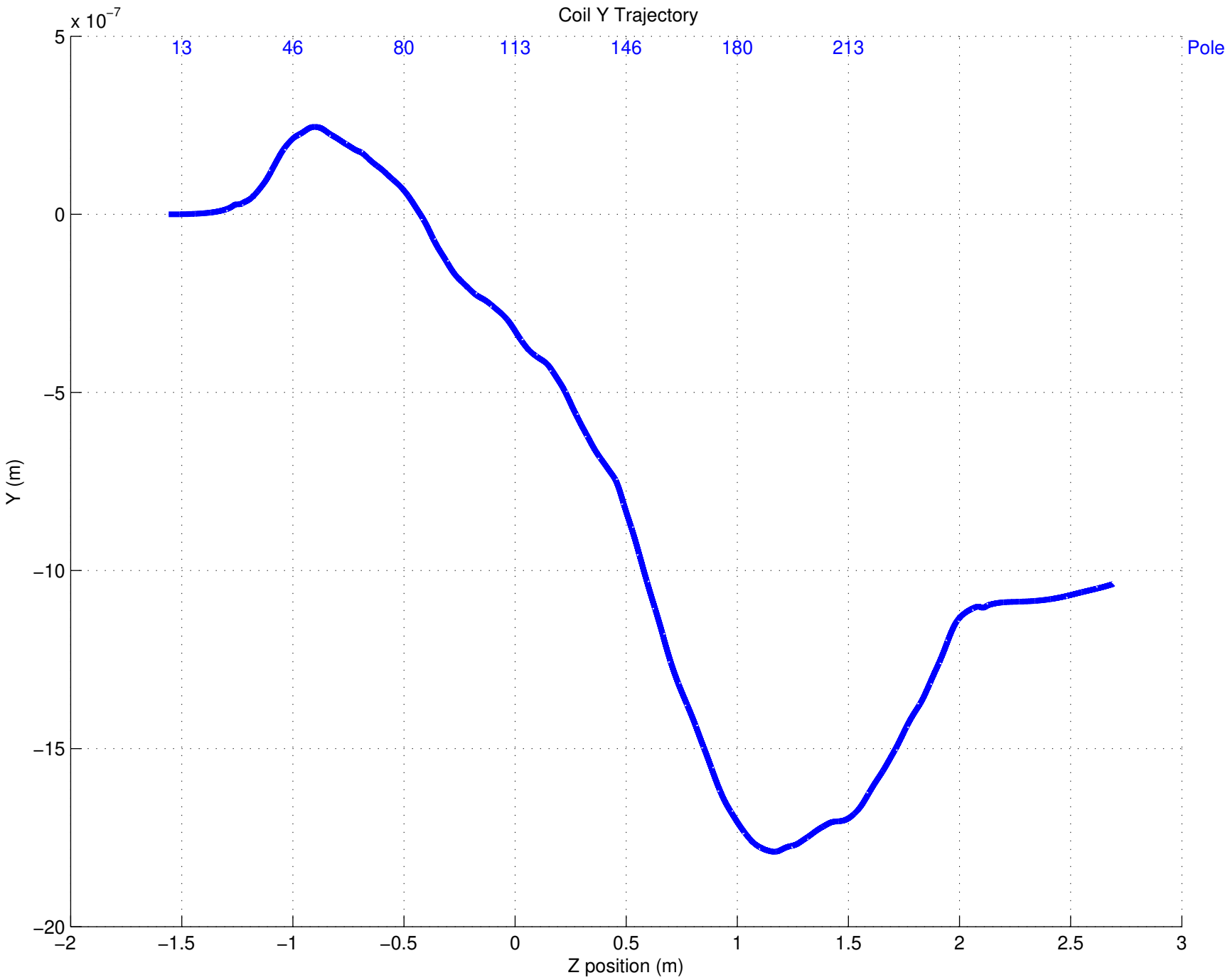

Coil Bx Field Integrals
Bx (T)
0.01
0.005
0
−0.005
−0.01
∫ Bx dz (Tm)
x 10^−4
1.5
1
0.5
0
−0.5
−1
−1.5
∫∫ Bx dz dz (Tm^2)
x 10^−5
10
8
6
4
2
0
−2
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3
Z position (m)


Coil By Field Integrals
By (T)
0.3
0.2
0.1
0
−0.1
−0.2
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3
∫ By dz (Tm)
x 10^−3
2
1.5
1
0.5
0
−0.5
−1
∫ ∫ By dz dz (Tm^2)
x 10^−4
3
2
1
0
−1
Z position (m)


Coil X Trajectory
x 10^-6
13
46
80
113
146
180
213
Pole
X (m)
x 10^-5
X'
x 10^-3
X'' (1/m)
Z position (m)


Coil Y Trajectory
x 10^-6
13
46
80
113
146
180
213
Pole
Y (m)
x 10^-6
Y'
x 10^-4
Y'' (1/m)
Z position (m)


Coil X Trajectory
x 10^-6
13
46
80
113
146
180
213
Pole
X (m)
Z position (m)
5
4
3
2
1
0
−1
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3


Coil Y Trajectory
x 10^-7
13
46
80
113
146
180
213
Pole
5
0
−5
−10
−15
−20
Y (m)
−2
−1.5
−1
−0.5
0
0.5
1
1.5
2
2.5
3
Z position (m)